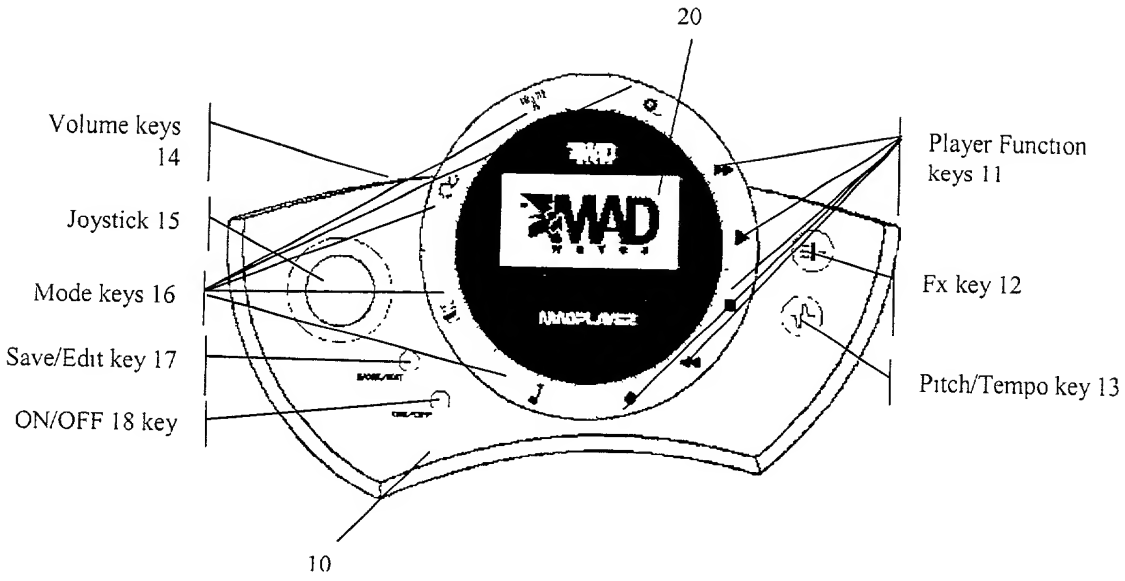

Figure 1
The Player

Play

Stop

Forward

Reverse

Record

Figure 2
Player Function Keys

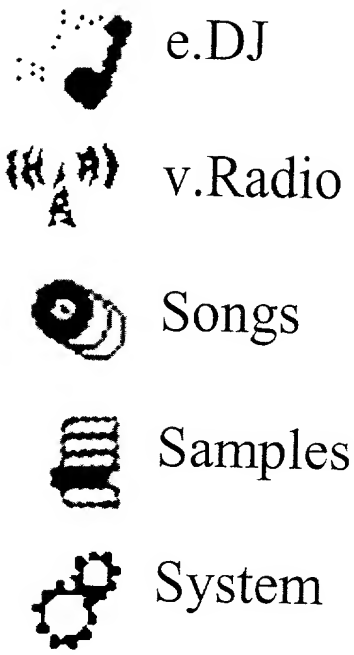

Figure 3
Mode/Direct Access Keys

Figure 4
Home Screen

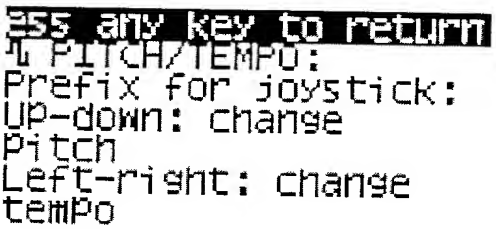

Figure 5
Help Screen

Figure 6
e.DJ Style Selection Screen

Figure 7
e.DJ I-Way Screen

Figure 8
e.DJ Underground Screen

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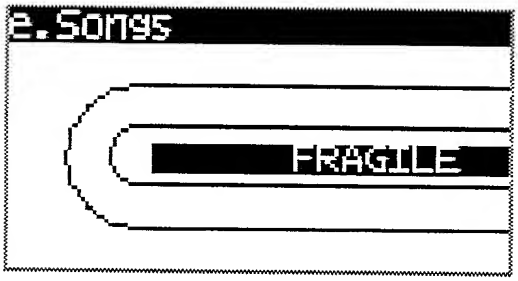


Figure 9
Play Song Screen

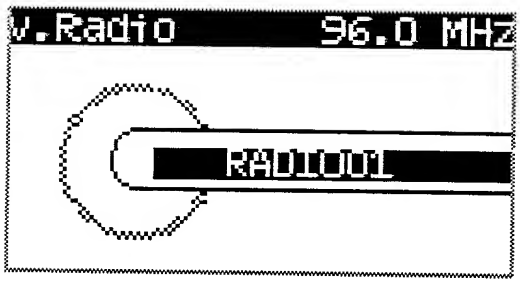


Figure 10
Play Radio Screen

Figure 11
List Edit Screen

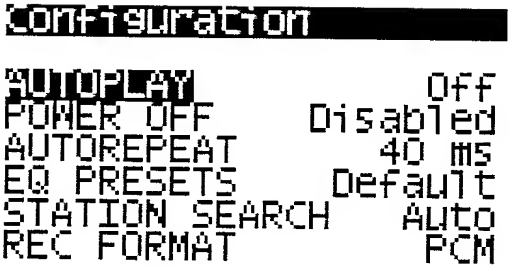


Figure 12
Configuration Screen

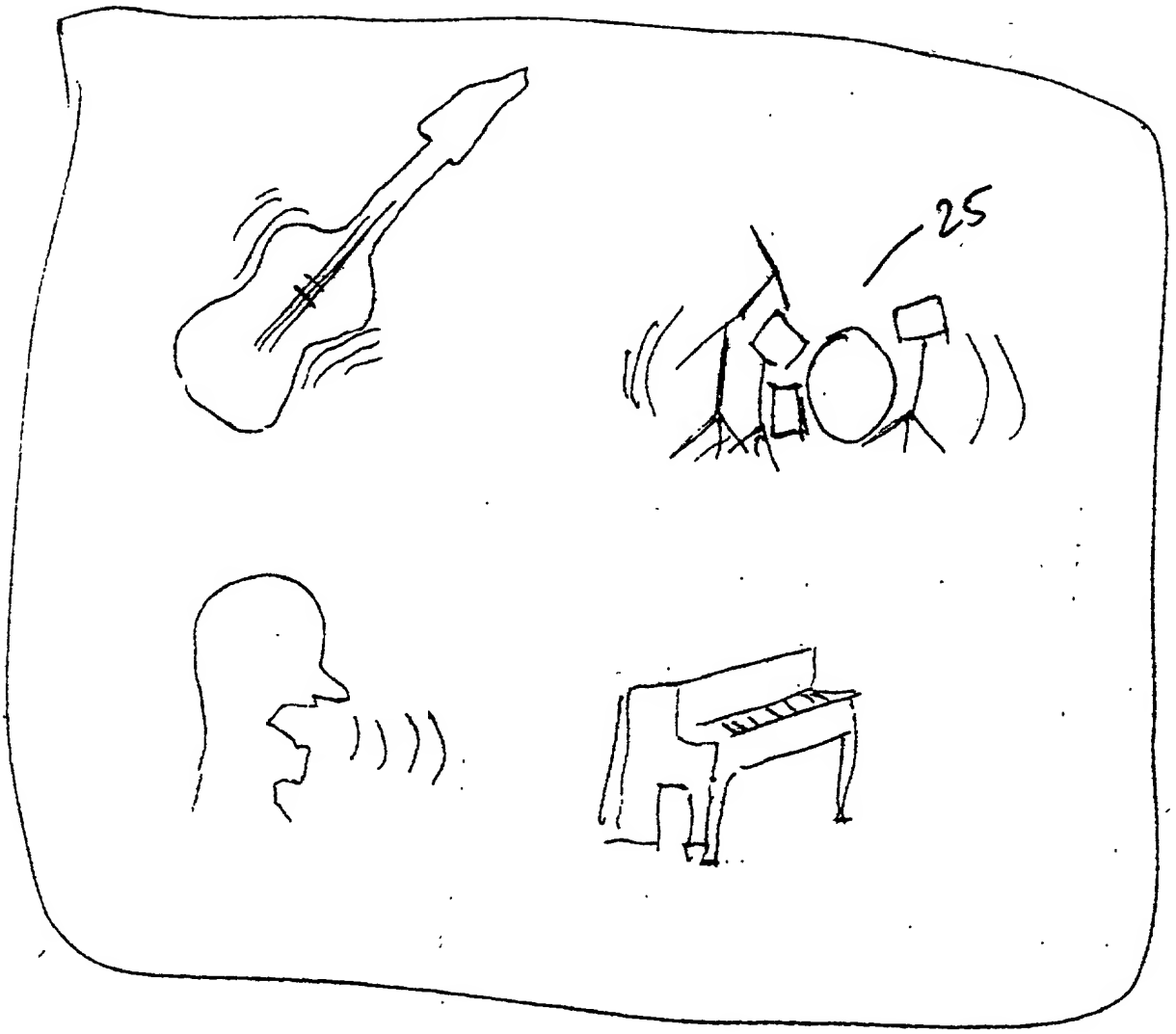


Figure 13
Alternative User Interface for I-Way Mode

Parameter	Values	Description
AutoPlay	On/Off	If AutoPlay is On, the MadPlayer automatically starts playing the first Play list contained on a SmartMedia card when inserted.
Power Off	Disabled, 1mn to 60mn in steps of 1mn.	Auto power off delay. The MadPlayer will power off automatically after this delay if no user action is detected.
AutoRepeat	40ms to 600ms in steps of 20ms	Keyboard auto-repeat delay in milliseconds. Delay before repeating the corresponding action when a key is pressed continuously.
EQ Preset	Factory Woof Hitek Flat User	Presets for 4-band equalizer. Factory, Woof, HiTek and Flat are factory presets and fixed. User preset can be configured by the User via the System-Equalizer menu.
Mic State	On/Off	Microphone input is On or Off.
Mic Volume	0 to 31	Microphone volume.
Echo Level	0 to 127	Level of echo applied to microphone input
Echo Time	0 to 127	Microphone echo delay. 0 shortest, 127 longest.
Echo Feedbk	0 to 31	Echo feedback: 0 minimum feedback, 127 maximum feedback.
Rec Format	PCM HQFADPCM	Format used to store recorded samples: PCM: PCM, 16bits mono, 19.31kHz HQFADPCM: High Quality ADPCM
Language	English Francais Espanol	Language used for the menus.
Sort Files	By Name By Type	Criterion used to sort files when displaying a list: by name (alphabetically) or by type (songs, samples, lists...).
Sort Presets	By Name By Freq	Criterion used to sort radio presets: by name (alphabetically) or by frequency.
Product	String	Read Only. Hardware version
Release	String	Read Only. Firmware version

Figure 14
Configuration Parameters

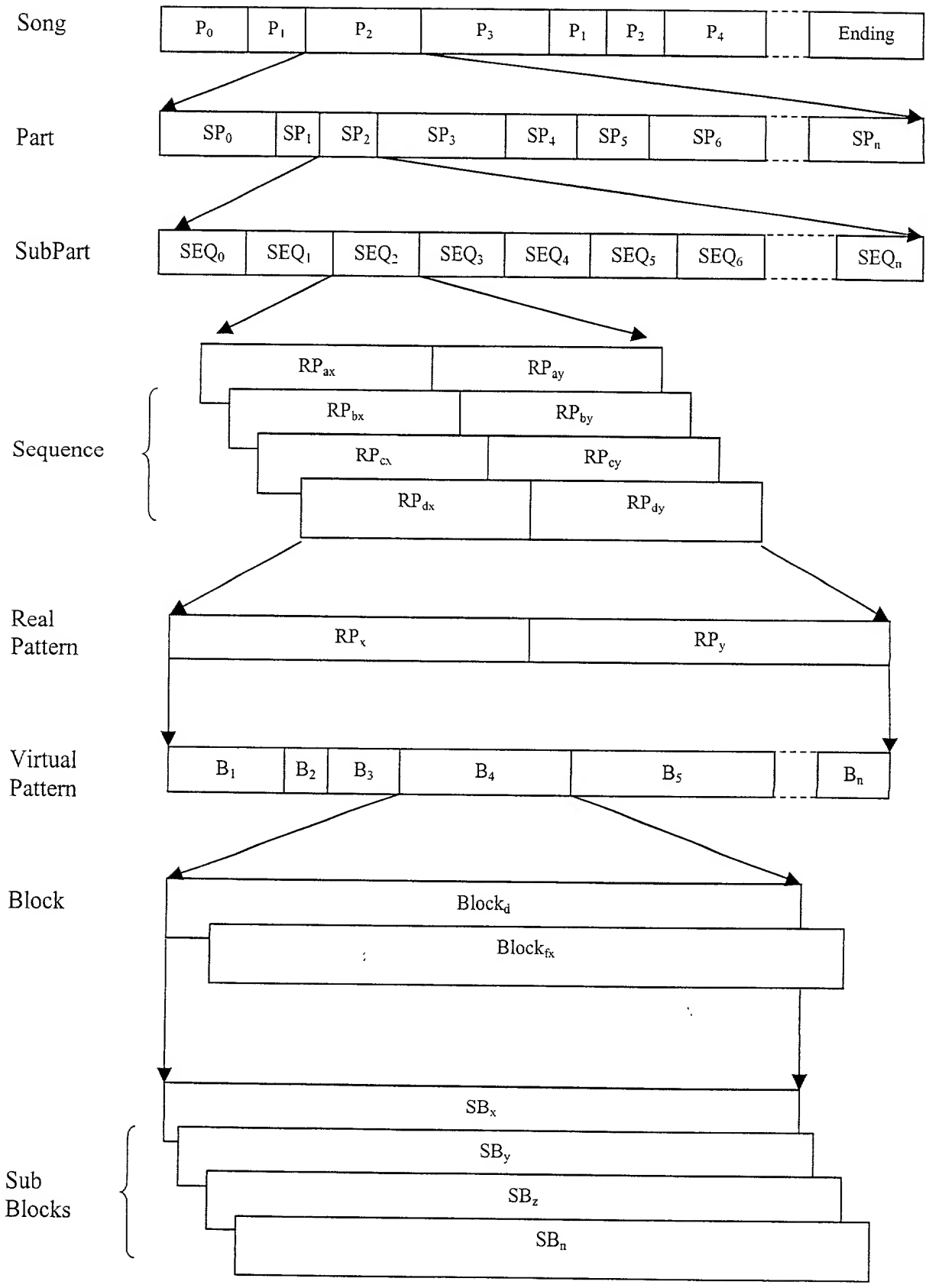


Figure 15 Song Structure

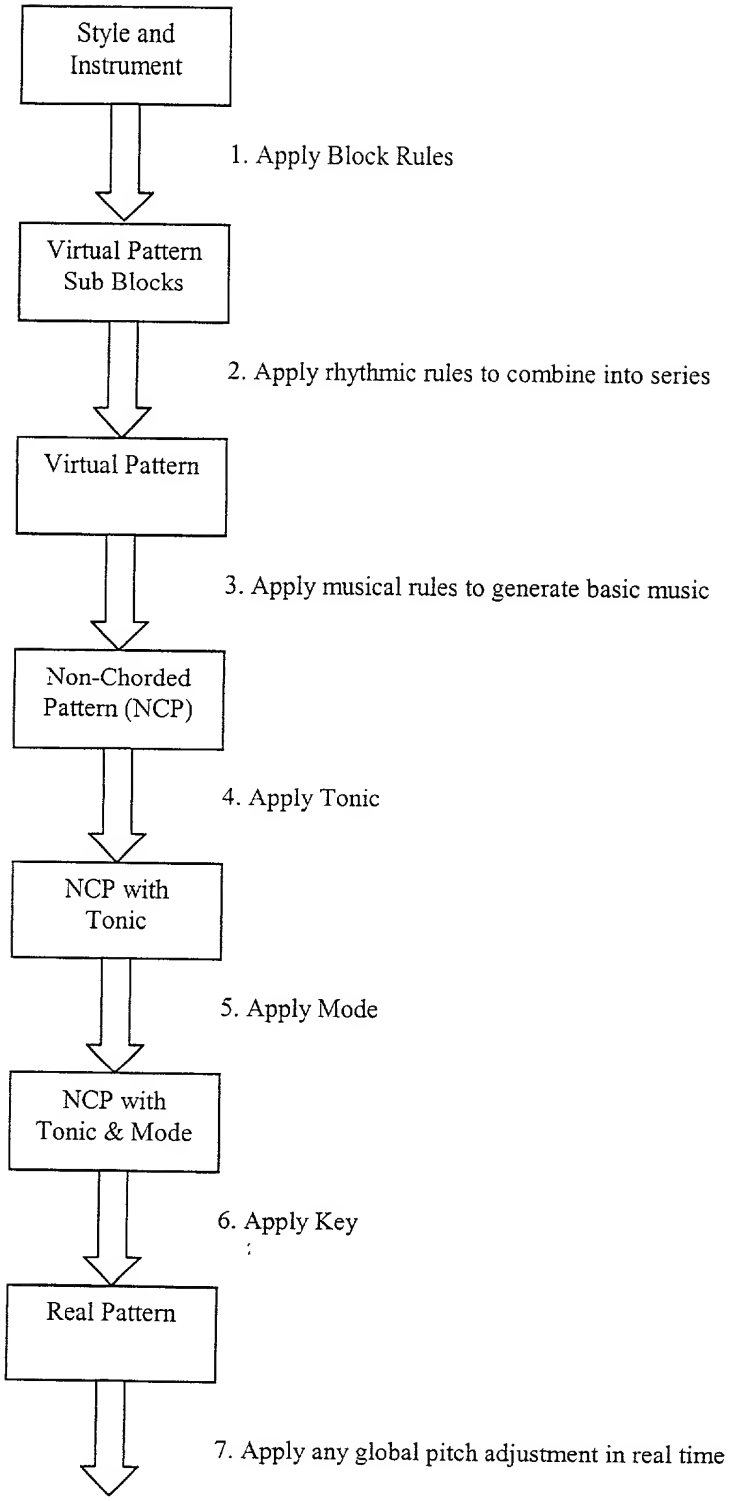
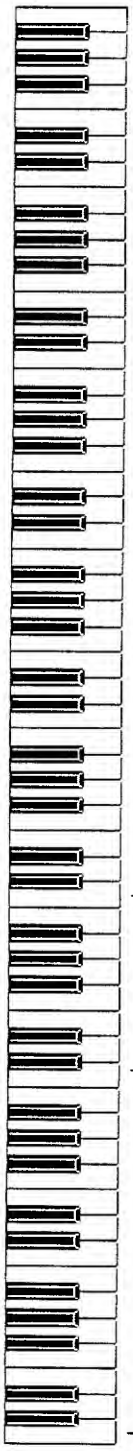


Figure 16
General Musical Generation Flow

Hexadecimal Value	*Internal Nomenclature*	*Potential Values*
40	Base Note	**C, E, G, B**
41	Magic Note 1	**+1, –1, +2, –2**
42	Magic Note 0	**+1, –1, +2, –2, 0**
43	High Note	**+7**
44	Last Note	**C, G**
45	One Before Last Note	**E, G, B**
46	ALC Controller • Harmonic Note • Fixed Note	 **0, +2, +4, +6, -3, -5, -7** **any**

Figure 17
Examples of Virtual Notes/Controllers



Treble Instrument, such as a violin, with an optimum range that is relatively high in pitch.

Midrange Instrument, such as a guitar, with an optimum range that is relatively medium in pitch.

Bass Instrument, such as a bass guitar, with an optimum range that is relatively low in pitch.

Figure 18Example of Tessitura

	Key			
Chord	A	C	D	G
Offset	-3	0	+2	+8

Figure 19

Mode Type	Individual Notes											
All Notes	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
Natural	C	C	D	D	E	F	F	G	G	A	A	B
Lydian Descending	C	C	D	D	E	E	F#	G	G	A	A	B
Lydian Ascending	C	D	D	E	E	F#	F#	G	A	A	A	B

Figure 20

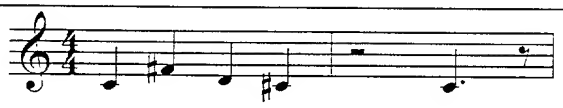
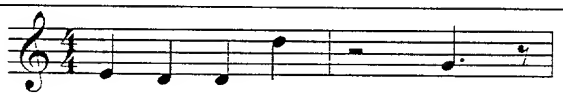
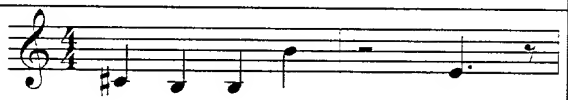
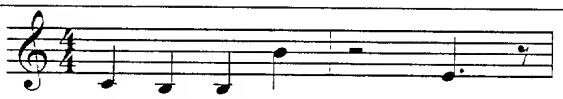
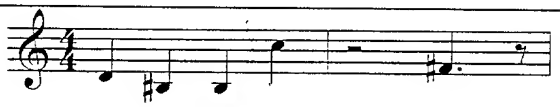
	Musical Notation	Software Notation (QN=30)
Virtual Pattern Sub-Blocks		C4 = Base Note F#4 = Magic Note Type 1 D4 = Magic Note Type 0 C#4 = High Note C4 = Base Note
Virtual Pattern (VP)		00 91 30 70 1e 81 30 00 91 36 64 1e 81 36 00 91 32 7f 1e 81 32 00 91 31 72 1e 81 31 3C 91 30 64 2d 81 30
Non-Chorded Pattern (NCP)		00 91 34 70 1e 81 34 00 91 32 64 1e 81 32 00 91 32 7f 1e 81 32 00 91 3e 72 1e 81 3e 3C 91 37 64 2d 81 37
NCP with Tonic (PwT)		00 91 31 70 1e 81 31 00 91 2f 64 1e 81 2f 00 91 2f 7f 1e 81 2f 00 91 3b 72 1e 81 3b 3C 91 34 64 2d 81 34
PwT with Mode (PwTM)		00 91 30 70 1e 81 30 00 91 2f 64 1e 81 2f 00 91 2f 7f 1e 81 2f 00 91 3b 72 1e 81 3b 3C 91 34 64 2d 81 34
Real Pattern (RP)		00 91 32 70 1e 81 32 00 91 31 64 1e 81 31 00 91 31 7f 1e 81 31 00 91 3d 72 1e 81 3d 3C 91 36 64 2d 81 36

Figure 21
Example of VP-to-RP Flow

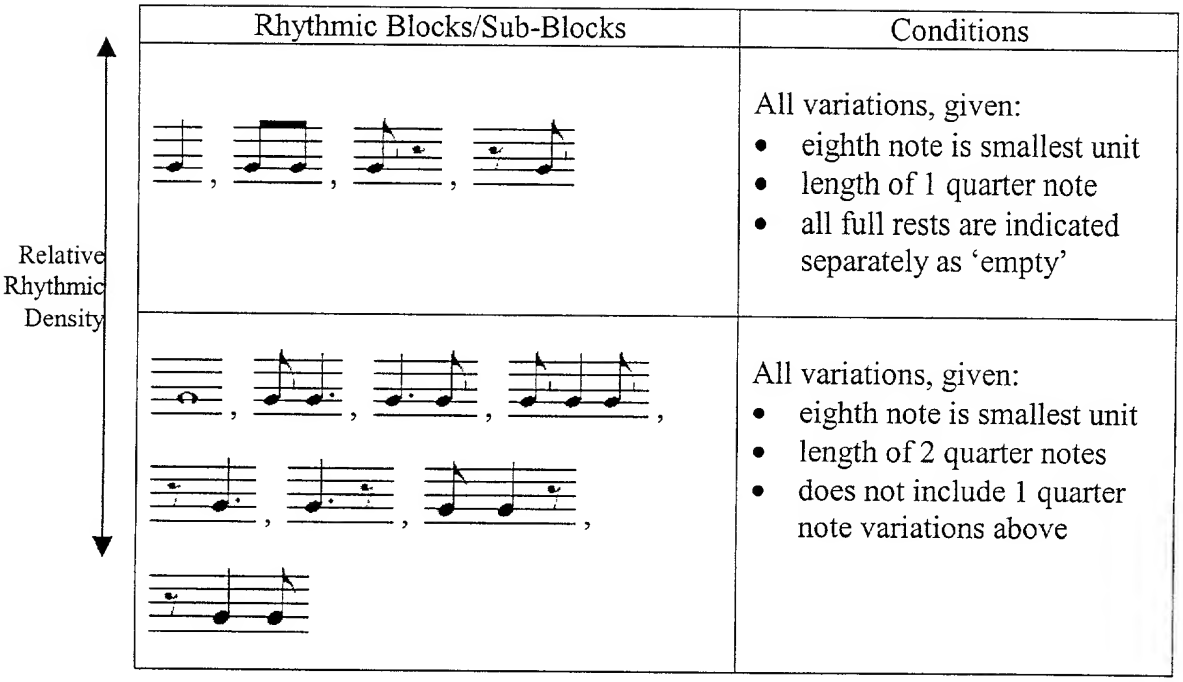


Figure 22
Rhythmic Variations based on Duration

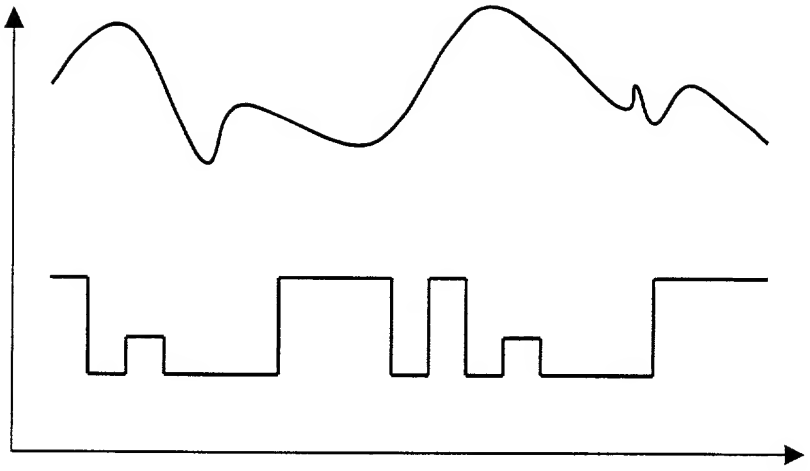


Figure 23
Relative Mobility of Note Pitch

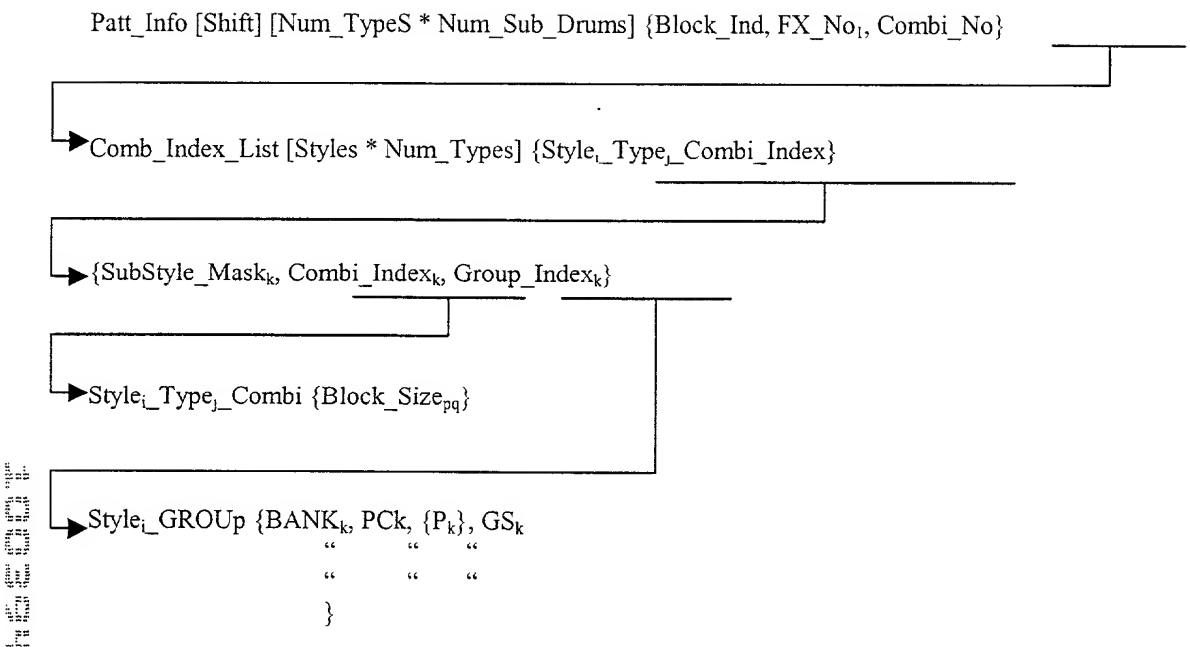


Figure 24
Pattern Structure Creation Example

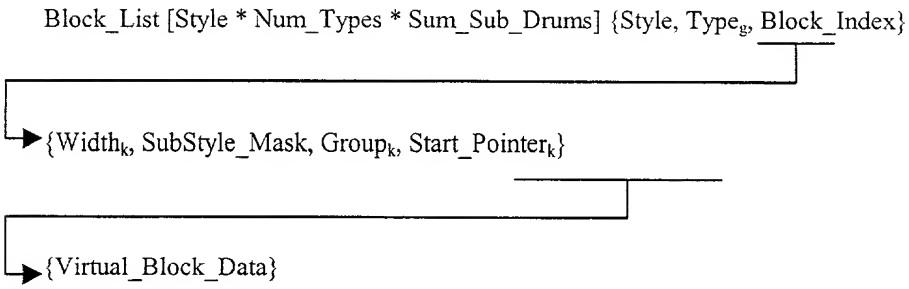


Figure 25
Block Structure Creation Example

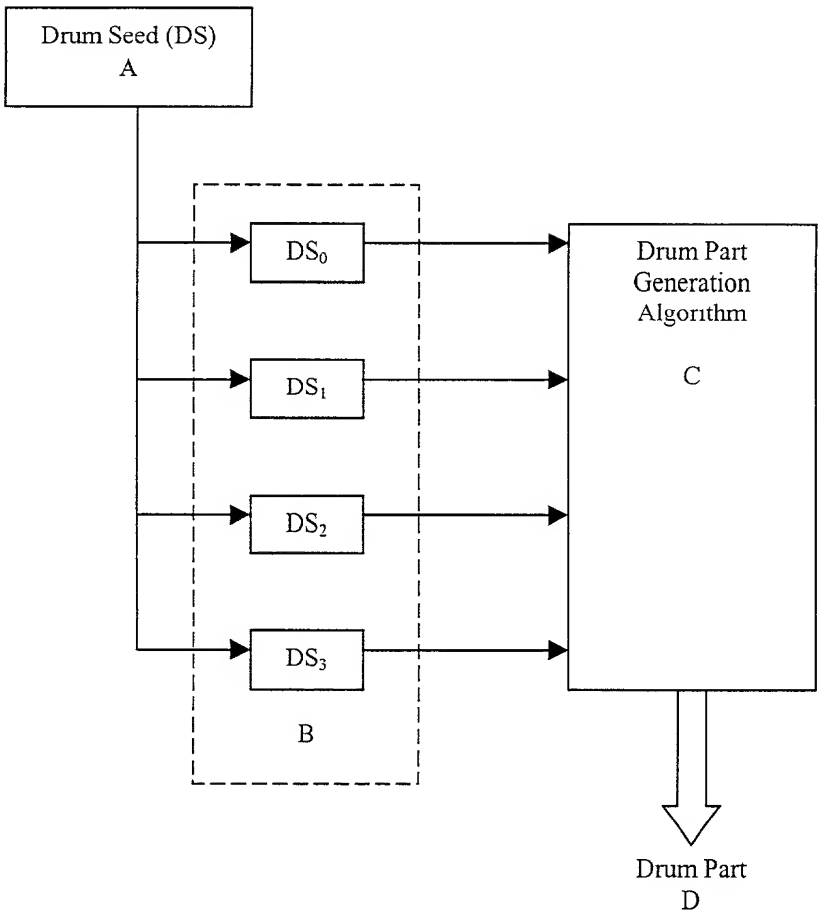


Figure 26
Pseudo-Random Number Implementation 1

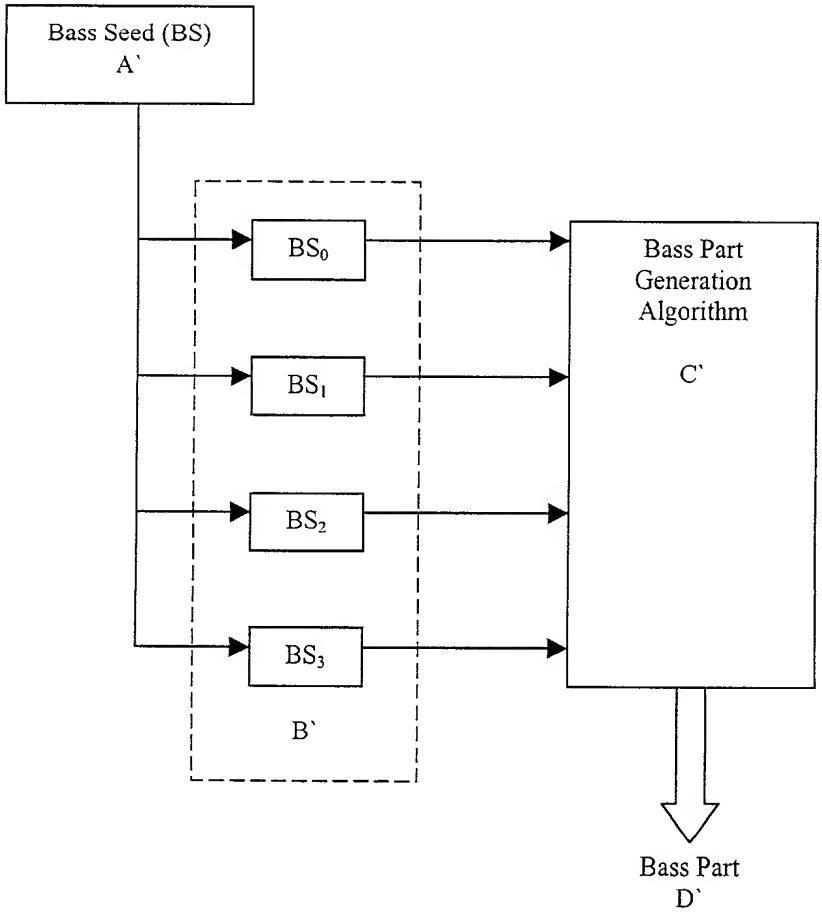


Figure 27
Pseudo-Random Number Implementation 2

Application Revision	Firmware/application version used to generate the data structure
Style, SubStyle	The style and/or substyle
Sound Bank, Synth Type	The sound bank/synth type
Sample Frequency	How often a sample is played in song
Sample List	List of samples associated with the Style
Key	First Key used, pitch offset
Tempo	Start Tempo (e.g., in pulses per quarter note)
Instrument	Identification of a particular instrument in an instrument group. Indexed by type of instrument
State	State of instrument indexed by instrument type (e.g., muted, un-muted, normal, Forced play, solo, etc.)
Parameter	Instrument parameters indexed by instrument type (e.g., volume, pan, timbre, etc.)
PRNG Seed Values	Seed values used to initialize the PRNG routines

Figure 28
Simple Data Structures

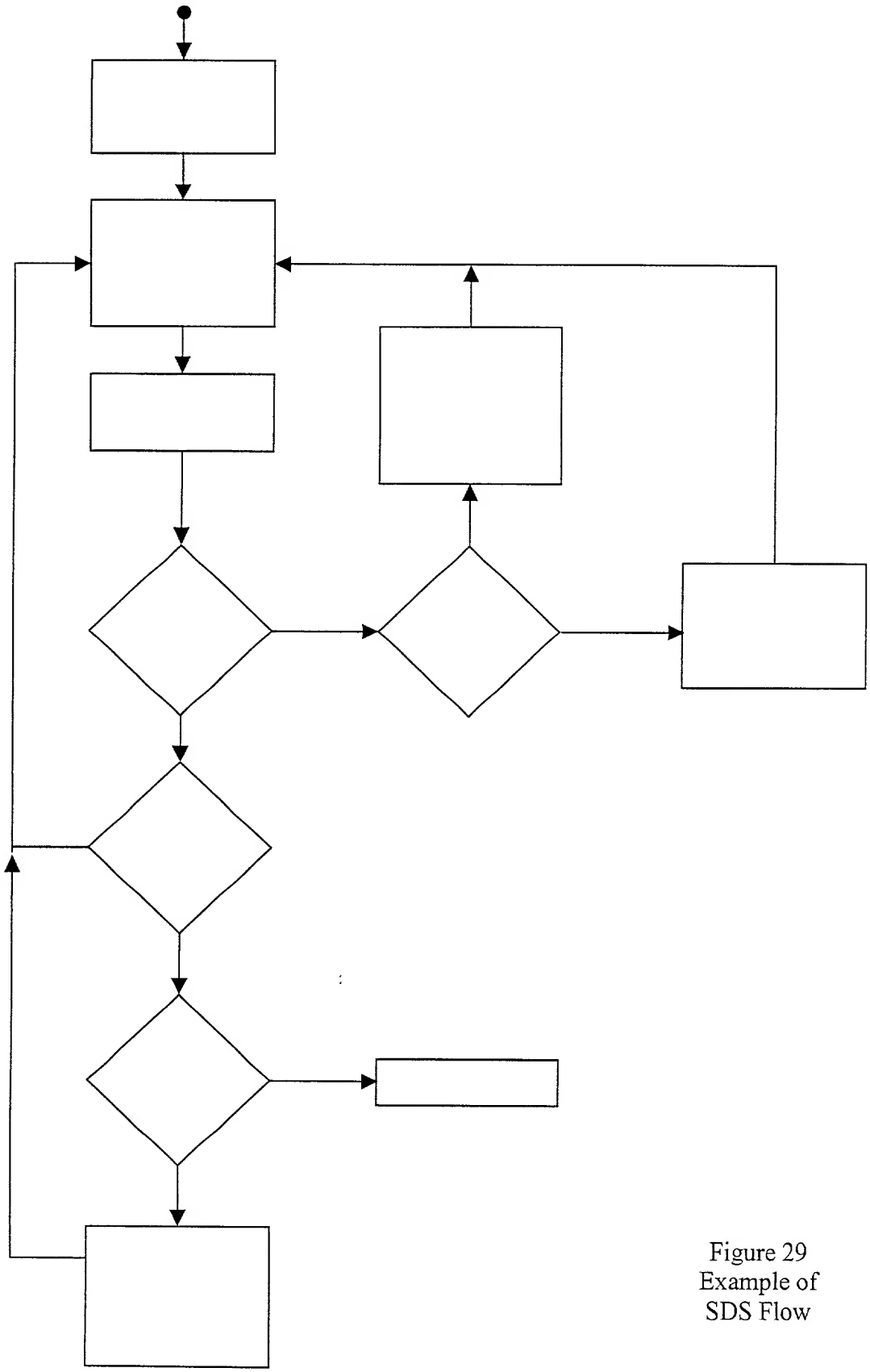


Figure 29
Example of
SDS Flow

Application Revision	Firmware/application version used to generate the data structure
Style, SubStyle	The style and/or substyle
Sound Bank, Synth Type	The sound bank/synth type
Sample Frequency	How often a sample is played in song
Sample List	List of samples associated with the Style
Key	First Key used, pitch offset
Tempo	Start Tempo (e.g., in pulses per quarter note)
Song Structure	Number of types, number of parts, sequence of parts, etc.
Structure	For every part: number of sub-parts, sequence of sub-parts, etc. Indexed by Part
Filtered Track	Type, function (e.g., sawtooth wave, sine wave, square wave, etc.), initial value, etc., of an effect. Indexed by Part.
Progression	Time signature, number of SEQs, list of maked types, etc. Indexed by Sub-Part.
Chord	Time stamp, chord vector, key note, progression mode, etc. Indexed by Sub-Part.
Pattern	Combination (Instrument), block data, effects data, etc. Indexed by Type.
Combination	List of instruments. Sub-set of 'Pattern' above.
FX Pattern	Effects data. Sub-set of 'Pattern' above.
Blocks	Block data. Subset of 'Pattern' above.
Instrument	Identification of a particular instrument in an instrument group. Indexed by type of instrument
State	State of instrument indexed by instrument type (e.g., muted, un-muted, normal, Forced play, solo, etc.)
Parameter	Instrument parameters indexed by instrument type (e.g., volume, param1, param2, etc.)
Nota Bene	Improvisation data (e.g., certain instruments or notes) that might be different each time the song is played.

Figure 30
Complex Data Structures

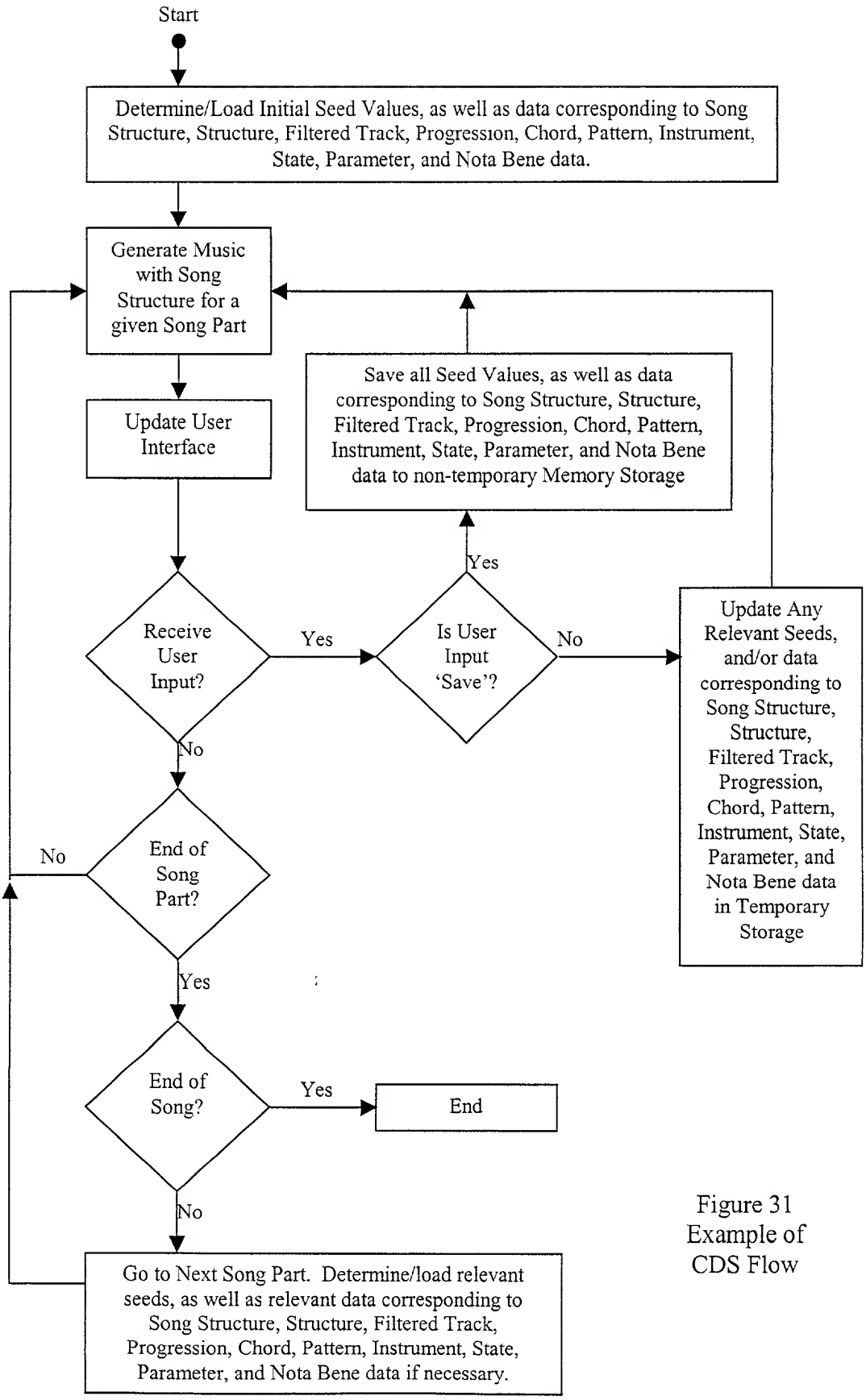


Figure 31
Example of
CDS Flow

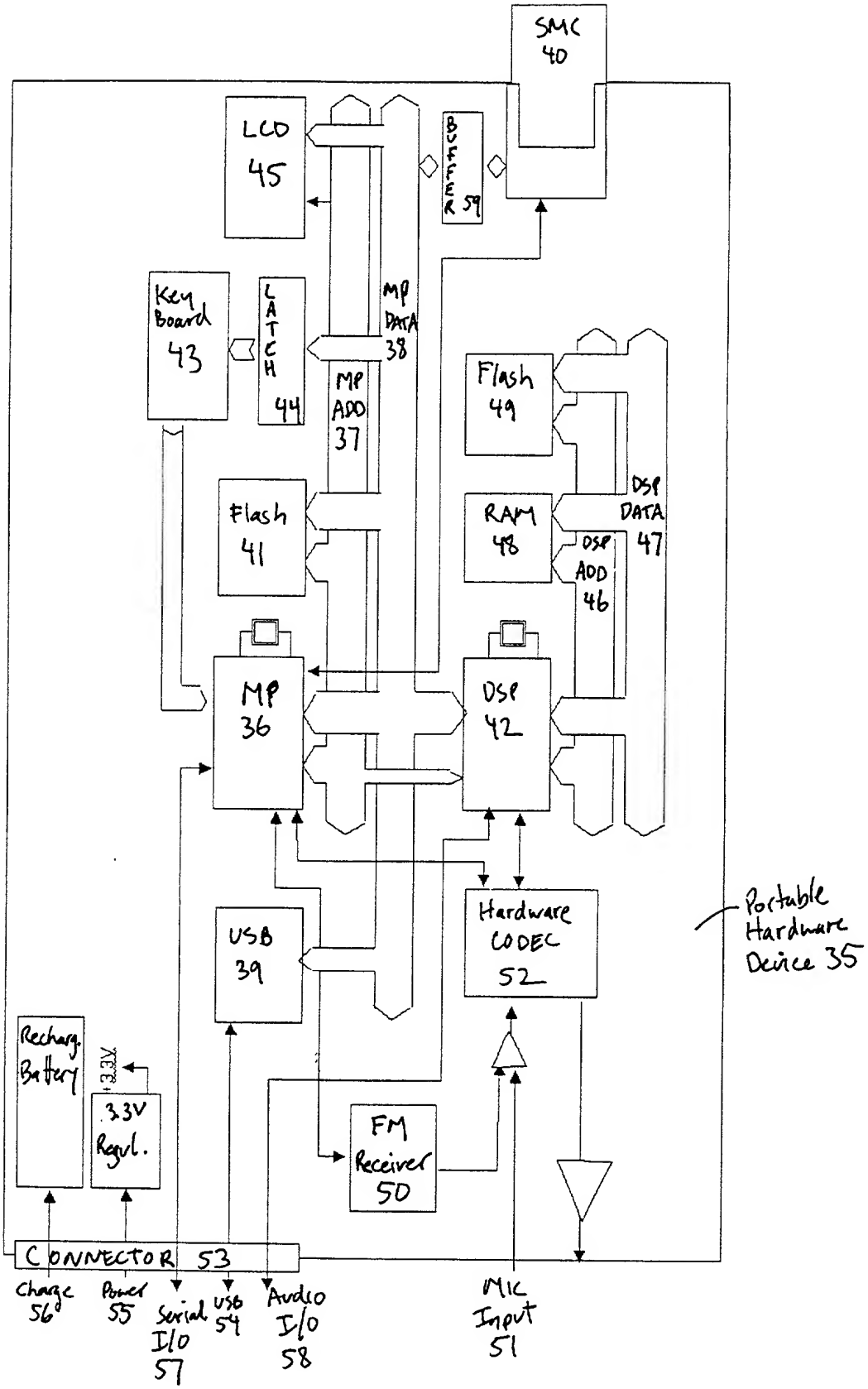

SMC
40
LCD
45
BUFFER 59
Key Board
43
LATCH
44
MP DATA
38
MP ADD
37
Flash
49
Flash
41
RAM
48
DSP DATA
47
DSP ADD
46
MP
36
DSP
42
Hardware CODEC
52
Portable Hardware Device 35
USB
39
Recharg. Battery
3.3V
3.3V Regul.
FM Receiver
50
CONNECTOR 53
Charge 56
Power 55
Serial I/O 57
USB 54
Audio I/O 58
MIC Input 51

Figure 32

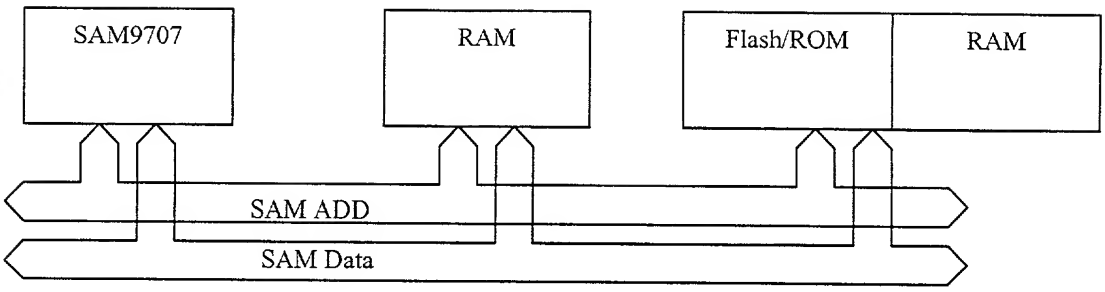


Figure 33
Additional Variation

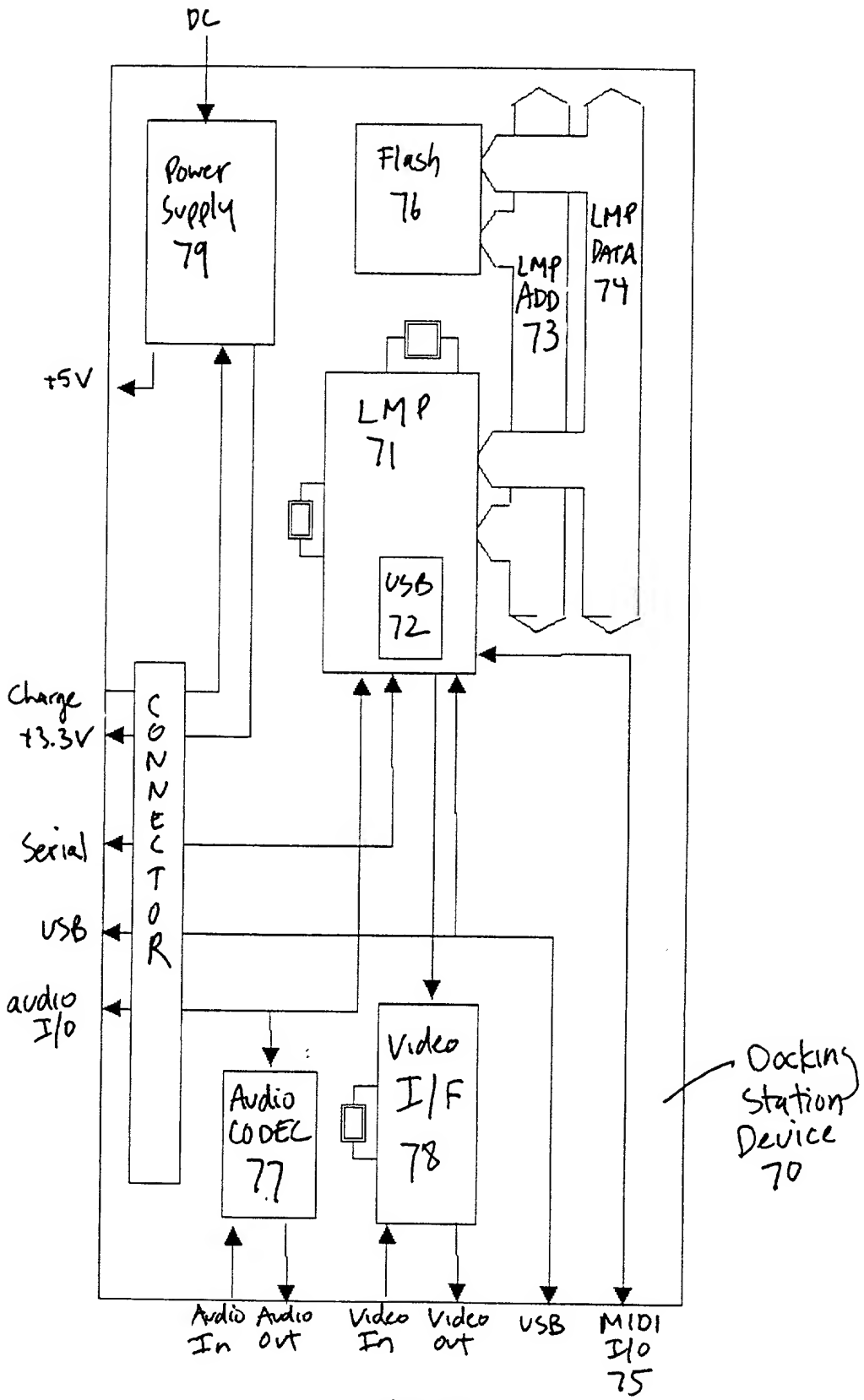

DC
Power Supply 79
Flash 76
LMP DATA 74
LMP ADD 73
+5V
LMP 71
USB 72
Charge +3.3V
Serial
USB
audio I/O
CONNECTOR
Audio CODEC 77
Video I/F 78
Docking Station Device 70
Audio In
Audio out
Video In
Video out
USB
MIDI I/O 75

Figure 34

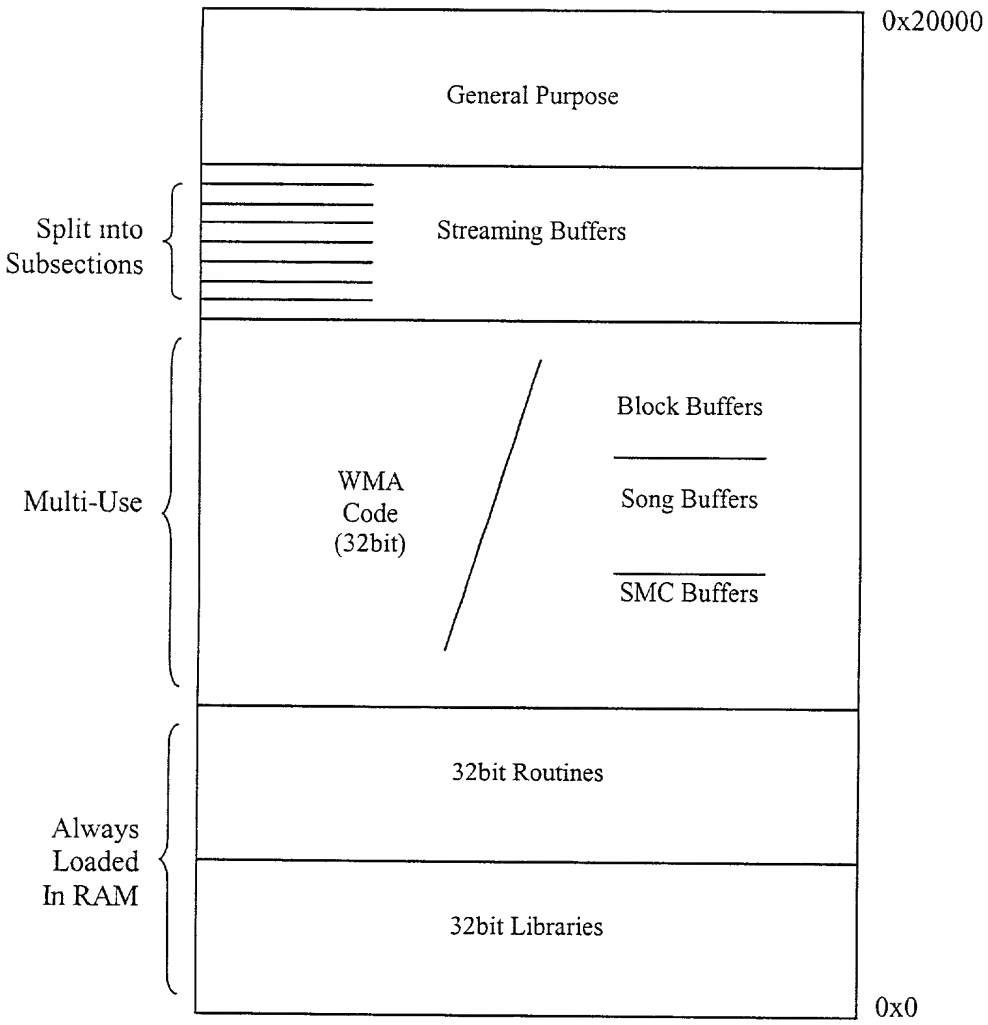


Figure 35
Address Map for MP RAM

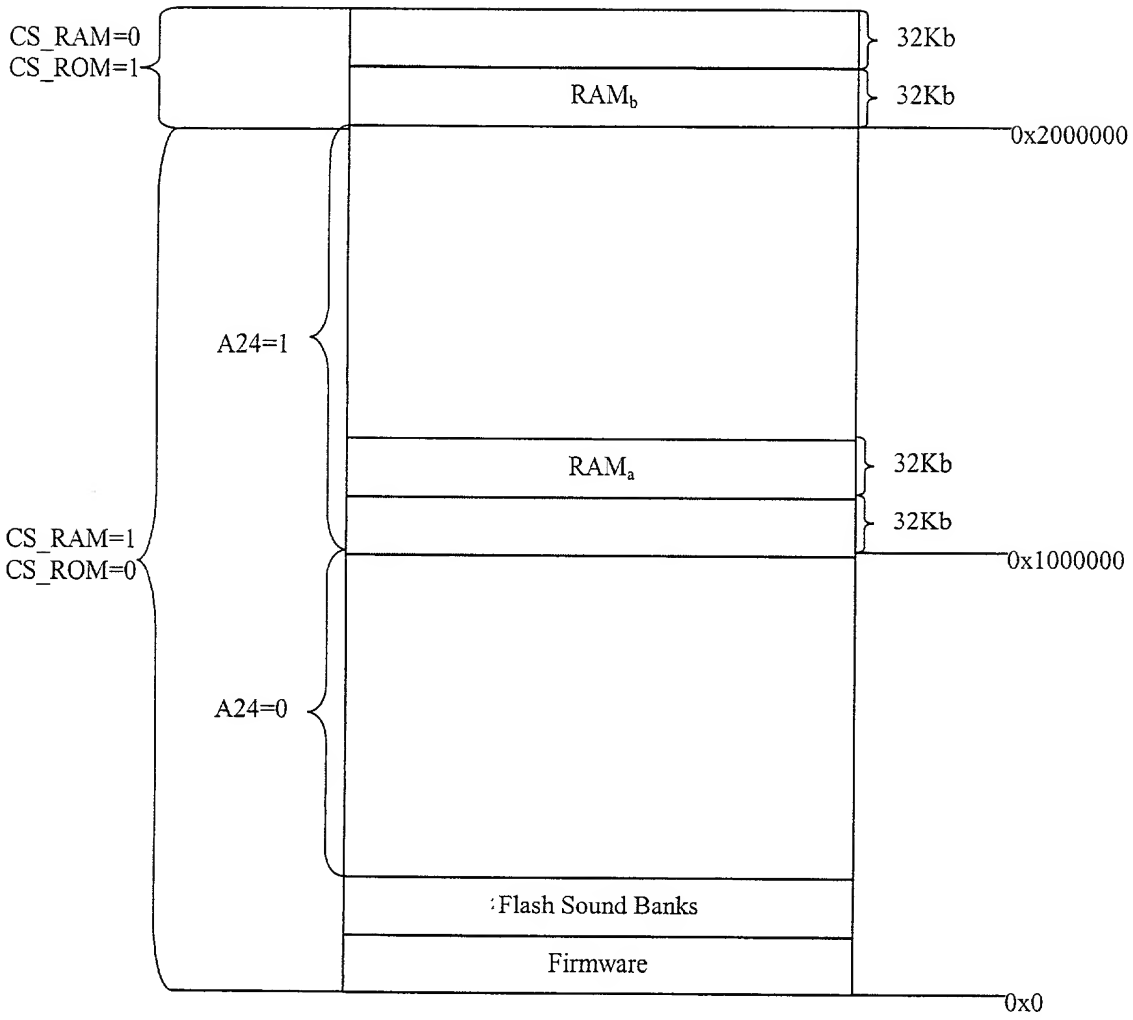


Figure 36
DSP-Local RAM/Flash Address Space

A24 \ BOOT	0	1
0	Flash	RAM
1	RAM	Flash

Figure 37
Bootstrap Mode Addressing

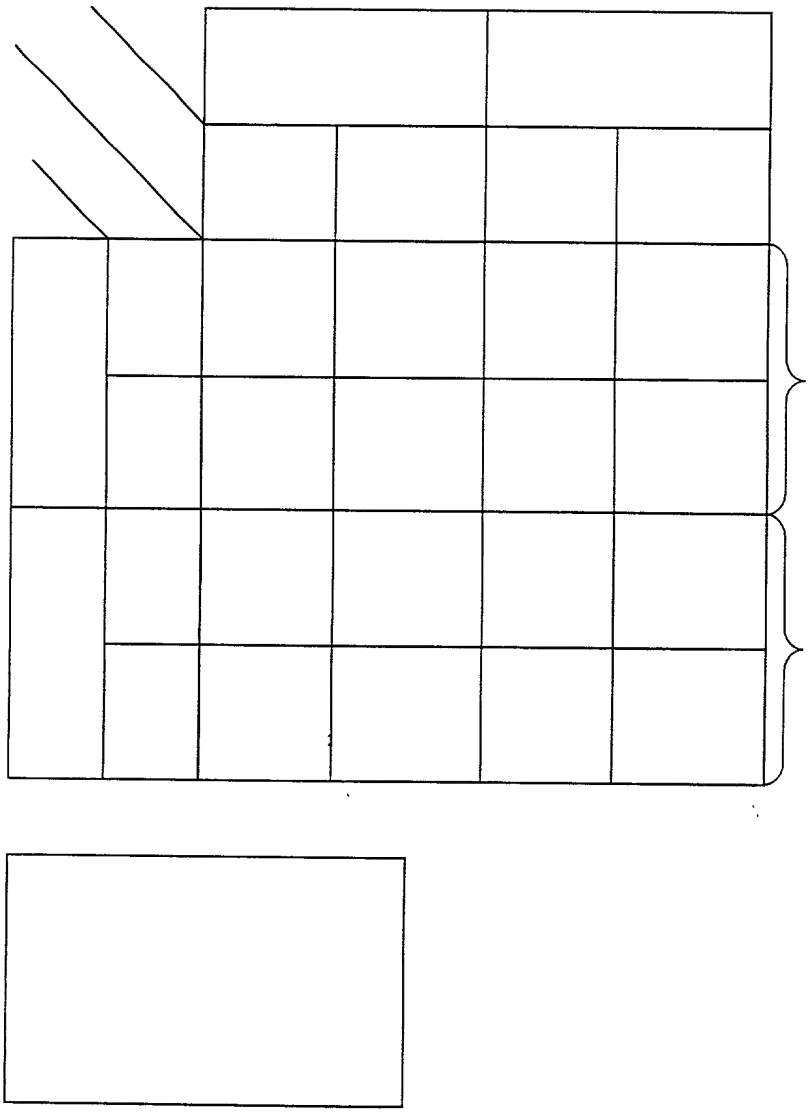


Figure 38

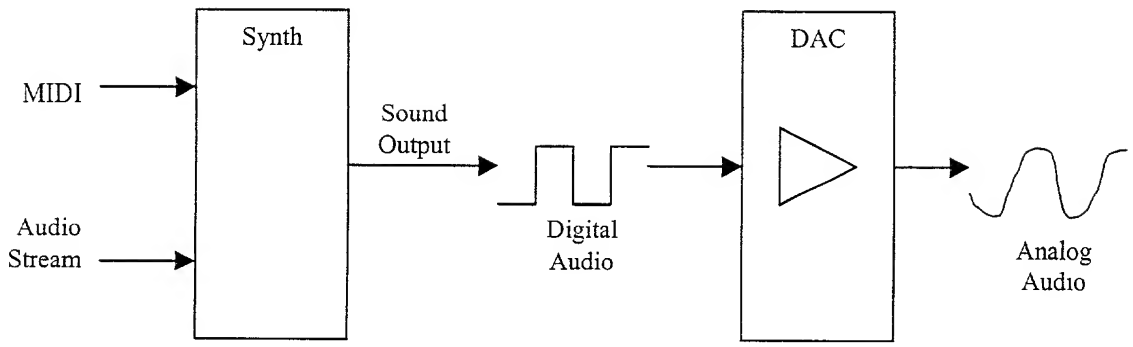


Figure 39
MIDI/Audio Stream

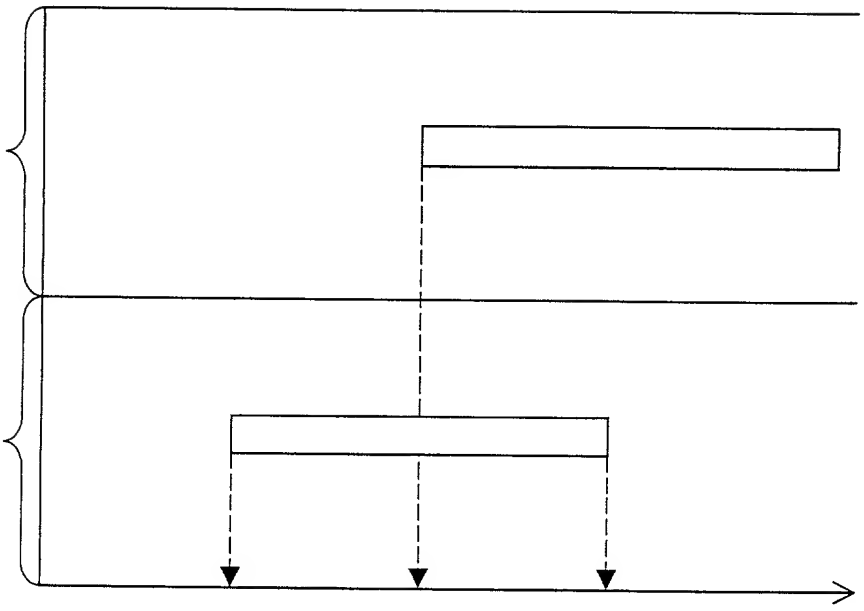


Figure 40
Simplified MIDI/Audio Stream Timeline

	NRPN Stream (Hexadecimal)	Indication/Meaning
1	B0	Channel Number
2	63	NRPN Controller A (e.g., audio sample type)
3	40	Identification of sample type (e.g., long, short, stereo, mono, etc.)
4	00	Delta time
5	62	NRPN Controller B (e.g., audio effects type)
6	00	Identification of effects type (ping pong, ripple, phaser, distortion, etc.)
7	00	Delta time
8	06	Identification of register for NRPN Controller A value
9	03	NRPN Controller A value (play 3rd audio sample in set, '00' is random)
10	00	Delta time
11	26	Identification of register for NRPN Controller B value
12	07	NRPN Controller B value (apply audio effect #7, '00' is random)

Figure 41
Simplified NRPN Example

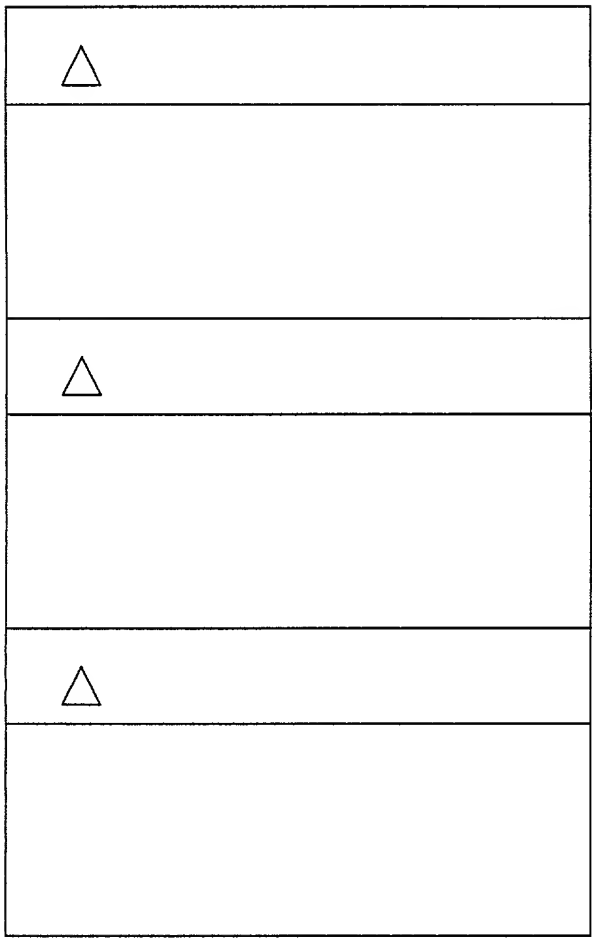


Figure 42
Simplified Special MIDI Type File